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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,671

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EXAMINER

WANG-HURST, KATHY W

ART UNIT

PAPER NUMBER

4173

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,671	<b>Applicant(s)</b> LI, HUI	
	<b>Examiner</b> KATHY WANG-HURST	<b>Art Unit</b> 4173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/1/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

Preliminary amendment filed on 5/1/2006 has been entered. Claims 1-18 are cancelled and claims 19-38 are pending for examination.

#### *Claim Objections*

1. Claim 28 is objected to because of the following informalities: the word "reminder" is misused in the context of the claim. Appropriate correction is required.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 19-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulikov in view of **Beard et al. (US 6434187)**.

Regarding claim 19, Kulikov discloses a method for signaling relating to an intended data transmission from a first radio station to a second radio station in an ad-hoc mode of a radio communication system, comprising:

dividing a frequency band into a plurality of sub-bands for communicating between the radio stations in the ad-hoc mode (**Abstract, ad-hoc network; col. 24 claim 33 dividing frequency band into two or more frequency channels/sub-bands**),

wherein the first radio station is assigned one or more first sub-bands and the second radio station is assigned one or more second sub-bands (**claim 35 every device transmits data on the specially assigned channel**); and  
sending a notification from the first radio station relating to the intended data transmission to the second radio station (**[0113] notification is sent towards the destination node; also see claim 57 on page 25, the third paragraph from the last, sender is notified about the delivery of the message**), the notification being sent only on one or more sub-bands selected (**claim 35 every device transmits data on the specially assigned channel**).

However, Kulikov fails to disclose notification is sent to the group consisting of one or more first sub-bands and one or more second sub-bands. Beard teaches a radio frequency transceiver that transmitting data at multiple frequencies to combat multipath fading (**col. 2 lines 1-7**). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate sending the same data to multiple frequencies in order to increase the likelihood that data will be transmitted and received uncorrupted (**col. 2 lines 1-7**).

Regarding claim 20, Kulikov discloses the method as claimed in Claim 19, wherein the first radio station detects a current occupancy of the first and/or second sub-bands prior to sending the notification (**[0113] notification is sent towards the destination node; also see claim 57 on page 25, the third paragraph from the last, sender is notified about the delivery of the message, therefore notification**), and

the notification is sent only on one or more unoccupied sub-bands (**claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**).

Regarding claim 21, Kulikov discloses the method as claimed in Claim 20, wherein if the first sub-band is unoccupied and the data transmission is intended only for the second radio station, then the notification is transmitted only on the first sub-band (**claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**).

Regarding claim 22, Kulikov discloses the method as claimed in Claim 20, wherein if the data transmission is intended only for the second radio station, the second sub-band is unoccupied and the first sub-band is occupied, then the notification is sent only on the second sub-band (**claim 35 every device transmits data on the specially assigned channel; claim 39, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**).

Regarding claim 23, Kulikov discloses the method as claimed in one of the Claims 20, wherein the data transmission is intended for a third radio station in addition to the second radio station, said third radio station is assigned a third sub-band for communicating, neither the first sub-band, nor the second sub-band is occupied, and the notification is sent on both the first and second sub-bands (**claim 35 every device**

Art Unit: 4173

**transmits data on the specially assigned channel; claim 39, channel is assigned to do certain job and if occupied the next unoccupied channel is selected).**

Regarding claim 24, Kulikov discloses the method as claimed in one of the Claims 20, wherein

the data transmission is intended for a third radio station in addition to the second radio station,

said third radio station is assigned a third sub-band for communicating,

the first sub-band is occupied and the second sub-band is unoccupied, and

the notification is sent only on the second sub-band **(claim 35 every device collects data on the specially assigned channel; claim 39, channel is assigned to do certain job and if occupied the next unoccupied channel is selected).**

Regarding claim 25, Kulikov discloses a method for signaling relating to an intended data transmission from a first radio station to a second radio station in an ad-hoc mode of a radio communication system, comprising:

dividing a frequency band into a plurality of sub-bands for communication between the radio stations in the ad-hoc mode, wherein the first radio station is assigned one or more first sub-bands and the second radio station is assigned one or more second sub-bands **(col. 24 claim 33 dividing frequency band into two or more frequency channels/sub-bands);**

receiving a notification at the second radio station from the first radio station relating to the intended data transmission from the first radio station to the second radio station **(claim 57 on page 25, the third paragraph from the last, sender is notified about**

Art Unit: 4173

**the delivery of the message); and**

after receiving the notification, sending an acknowledgement from the second radio station to the first radio station to acknowledge the intended data transmission (**claim 57 last paragraph, after the message is successfully delivered a corresponded notification is transmitted to the sender, therefore acknowledgement**), the acknowledgement being sent only on one or more sub-bands selected (**claim 35 device transmit data on assigned channel; and claim 39 on unoccupied channel**).

However, Kulikov fails to disclose notification is sent to the group consisting of one or more first sub-bands and one or more second sub-bands. Beard teaches a radio frequency transceiver that transmitting data at multiple frequencies to combat multipath fading(**col. 2 lines 1-7**). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate sending the same data to multiple frequencies in order to increase the likelihood that data will be transmitted and received uncorrupted (**col. 2 lines 1-7**).

Regarding claim 26, Kulikov discloses the method as claimed in Claim 25, wherein prior to sending the acknowledgement, the second radio station detects a current occupancy of the first and/or second sub-bands (**claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**), and

the acknowledgement is sent only on one or more unoccupied sub-bands(**claim 35 device transmit data on assigned channel**).

Regarding claim 27, Kulikov discloses the method as claimed in Claim 26, wherein the second radio station detects a current occupancy for the one or more sub-bands used to send the notification, and

if the one or more sub-bands used to send the notification are unoccupied, then the acknowledgement is sent on the same one or more sub-bands used to send the notification **(claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected)**.

Regarding claim 28, Kulikov discloses the method as claimed in claim 26, wherein the second radio station detects a current occupancy for the one or more sub-bands used to send the notification,

the second radio station detects that at least one of the sub-bands used to send the notification is occupied and a reminder of the sub-bands used to send the notification is unoccupied, and

the acknowledgement is sent on one or more sub-bands of the reminder **(claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected)**.

Regarding claim 29, Kulikov discloses a method for signaling relating to an intended data transmission from a first radio station to a second radio station in an ad-hoc mode of a radio communication system, comprising:

dividing a frequency band into a plurality of sub-bands for communicating between the



Art Unit: 4173

radio stations in the ad-hoc mode, wherein the first radio station is assigned one or more first sub-bands and the second radio station is assigned one or more second sub-bands **(col. 24 claim 33 dividing frequency band into two or more frequency channels/sub-bands)**; and

sending a notification from the first radio station relating to the intended data transmission to the second radio station, the notification being sent only on one or more sub-bands **(claim 35 device transmit data on assigned channel)**;

receiving a notification at the second radio station from the first radio station relating to the intended data transmission from the first radio station to the second radio station **(claim 57 on page 25, the third paragraph from the last, sender is notified about the delivery of the message)**; and

after receiving the notification, sending an acknowledgement from the second radio station to the first radio station to acknowledge the intended data transmission, the acknowledgement being sent only on one or more sub-bands **(claim 57 last paragraph, after the message is successfully delivered a corresponded notification is transmitted to the sender)**.

However, Kulikov fails to disclose notification is sent to the group consisting of one or more first sub-bands and one or more second sub-bands. Beard teaches a radio frequency transceiver that transmitting data at multiple frequencies to combat multipath fading**(col. 2 lines 1-7)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate sending the

Art Unit: 4173

same data to multiple frequencies in order to increase the likelihood that data will be transmitted and received uncorrupted (**col. 2 lines 1-7**).

Regarding claim 30, Kulikov discloses the method as claimed in Claim 29, wherein the data transmission is performed on one or more sub-bands selected from the group consisting of:

the sub-band or sub-bands used to send the notification (**claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**), and

the sub-band or sub-bands used to send the acknowledgment (**claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**).

Regarding claim 31, Kulikov discloses the method as claimed in Claim 20, wherein the second radio station receives the notification from the first radio station, after receiving the notification, the second radio station sends an acknowledgement to the first radio station to acknowledge the intended data transmission, the acknowledgement being sent only on one or more sub-bands (**claim 56 last three paragraphs**).

However, Kulikov fails to disclose notification is sent to the group consisting of one or more first sub-bands and one or more second sub-bands. Beard teaches a radio frequency transceiver that transmitting data at multiple frequencies to combat multipath fading (**col. 2 lines 1-7**). Therefore, it would have been obvious to a person having

Art Unit: 4173

ordinary skill in the art at the time the invention was made to incorporate sending the same data to multiple frequencies in order to increase the likelihood that data will be transmitted and received uncorrupted **(col. 2 lines 1-7)**.

Regarding claim 32, Kulikov discloses the method as claimed in Claim 31, wherein prior to sending the acknowledgement, the second radio station detects a current occupancy of the first and/or second sub-bands, and the acknowledgement is sent only on one or more unoccupied sub-bands **(claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected)**.

Regarding claim 33, Kulikov discloses a radio station for communicating with another radio station in an ad-hoc mode of a radio communication system, comprising:  
a first memory to store information identifying one or more first sub-bands assigned to the radio station for communicating, said sub-bands belonging to a frequency band which is divided into a plurality of sub-bands **(claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected, therefore memory must exist)**;  
a second memory to store information identifying one or more second sub-bands assigned to the other radio station for communicating, said second sub-bands belonging to the frequency band **(claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected)**; and

Art Unit: 4173

a transmitter to send the other radio station a notification of an intended data transmission to the other radio station, the transmitter sending the notification on one or more sub-bands selected **(Abstract, data transmission therefore a transmitter must exist)**.

However, Kulikov fails to disclose notification is sent to the group consisting of one or more first sub-bands and one or more second sub-bands. Beard teaches a radio frequency transceiver that transmitting data at multiple frequencies to combat multipath fading**(col. 2 lines 1-7)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate sending the same data to multiple frequencies in order to increase the likelihood that data will be transmitted and received uncorrupted **(col. 2 lines 1-7)**.

Regarding claim 34, Kulikov discloses the radio station as claimed in Claim 33, wherein before sending the notification, the transmitter detects a current occupancy of the first and/or second sub-bands **(claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected)**, and the transmitter sends the notification only on one or more unoccupied sub-bands **(claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected)**.

Regarding claim 35, Kulikov discloses a radio station for communicating with another radio station in an ad-hoc mode of a radio communication system, comprising:

Art Unit: 4173

a first memory to store information identifying one or more first sub-bands assigned to the radio station for communicating, said sub-bands belonging to a frequency band which is divided into a plurality of sub-bands;

a second memory to store information identifying one or more second sub-bands assigned to the other radio station for communicating, said second sub-bands belonging to the frequency band **(col. 24 claim 33 dividing frequency band into two or more frequency channels/sub-bands; and claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected; therefore a memory must exist)**;

means for receiving and analyzing a notification from the other radio station, the notification indicating an intended data transmission to the radio station from the other radio station, the notification being received on one or more sub-bands; and

a transmitter to send an acknowledgement to the other radio station to acknowledge the intended data transmission, the acknowledgement being sent on one or more sub-bands selected **(claim 57 last paragraph, after the message is successfully delivered a corresponded notification is transmitted to the sender)**.

However, Kulikov fails to disclose notification is sent to the group consisting of one or more first sub-bands and one or more second sub-bands. Beard teaches a radio frequency transceiver that transmitting data at multiple frequencies to combat multipath fading**(col. 2 lines 1-7)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate sending the

same data to multiple frequencies in order to increase the likelihood that data will be transmitted and received uncorrupted (**col. 2 lines 1-7**).

Regarding claim 36, Kulikov discloses the radio station as claimed in Claim 35, wherein before sending the acknowledgment, the transmitter detects a current occupancy of the first and/or second sub-bands (**claim 39 on page 24, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**), and the transmitter sends the acknowledgment only on the one or more sub-bands used for the notification which are currently unoccupied (**claim 57 last paragraph, after the message is successfully delivered a corresponded notification is transmitted to the sender**).

Regarding claim 37, Kulikov discloses a computer readable storage medium containing a computer program to control a computer to perform a process for a first radio station in an ad-hoc mode of a radio communication system, the process comprising: selecting one or more sub-bands which will be used for sending, to a second radio station, a notification of an intended data transmission from the first radio station to the second radio station, said selection being made from one or more first sub-bands which have been assigned to the first radio station for communicating and/or from one or more second sub-bands which have been assigned to the second radio station for communicating, said sub-bands belonging to a frequency band which is divided into a plurality of sub-bands (**claim 35 every device transmits data on the specially**

Art Unit: 4173

**assigned channel; claim 39, channel is assigned to do certain job and if occupied the next unoccupied channel is selected).**

Regarding claim 38, Kulikov discloses a computer readable storage medium containing a computer program to control a computer to perform a process for a second radio station in an ad-hoc mode of a radio communication system, the process comprising: selecting one or more sub-bands which will be used for sending, to a first radio station, an acknowledgement of an intended data transmission from the first radio station to the second radio station (**claim 57 last paragraph, after the message is successfully delivered a corresponded notification is transmitted to the sender**), the acknowledgment being sent from the second radio station to the first radio station, said selection being made from one or more first sub-bands which have been assigned to the first radio station for communicating and/or from one or more second sub-bands which have been assigned to the second radio station for communicating(**claim 35 every device transmit on the specially assigned channel; claim 39, channel is assigned to do certain job and if occupied the next unoccupied channel is selected**), said sub-bands belonging to a frequency band which is divided into a plurality of sub-bands (**col. 24 claim 33 dividing frequency band into two or more frequency channels/sub-bands**).

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Blair et al. (US 2002/0173271) discloses a controller and transceiver in a wireless communications network.

Beyer et al. (US 2006/0104301) discloses an adaptive communication protocol for wireless networks.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATHY WANG-HURST whose telephone number is (571)270-5371. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm, alternate Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benny Tieu can be reached on (571)272-7490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 4173

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/KATHY WANG-HURST/  
Examiner, Art Unit 4173

/Benny Q. Tieu/  
Supervisory Patent Examiner, Art Unit 4173